REMARKS

The Applicant elected claims 60-77 in reply to a restriction requirement the Examiner issued in an Office Action dated July 11, 2008. The Applicants 'election was treated as an election without traverse. Claims 60-77 are pending. Application has amended claims 60 and 76, and has added new claims 78-82.

REJECTIONS UNER 35 U.S.C. §103

The Examiner rejected claims 60-77 under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent Nos. 5,354,359 to Wan et al. (hereafter Wan) and 4,721,526 to Elmore et al. (hereafter Elmore).

Applicant disagrees with the Examiner's rejection.

Applicant has amended claim 60, presented in clean form below, differs from the disclosure of Wan and Elmore individually and/or combinedly in at least the italicized features indicated below:

> 60. A process for recovering a precious metal from a precious metal-containing material, comprising:
> (a) providing a heap of the precious metal-containing material; and
> (b) passing a thiosulfate lixiviant and molecular oxygen through the heap to form a pregnant leach solution comprising dissolved precious metals, *wherein the molecular oxygen is at a pressure greater than its ambient atmospheric pressure before introduction into the heap, wherein the thiosulfate lixiviant has a free ammonia content of no more than about 0.03M.*

Wan discloses a thiosulfate lixiviant having "an ammonia concentration sufficient to stabilize the thiosulfate complex and the cupric tetrammine, such as at least about 0.05M and preferably at least about 0.1M" (column 8, lines 1-4). The spraying of the lixiviant on the heap

to "increase the oxygen content of the lixiviant" (column 10, lines 59-61) fails, as the Examiner admits, to include forced aeration of the heap. This is so because forced aeration will evolve ammonia gas, which poses a substantial environmental hazard. Rather, Wan relies on the flow of ambient air through the heap and the natural oxygenation of the lixiviant when sprayed on the heap to provide the molecular oxygen needed for oxidation and dissolution of gold. This reliance on natural aeration can decrease gold recoveries and slow the leaching kinetics.

Because of the environmental problems associated with free ammonia evolution from forced aeration, one of ordinary skill in the art would not find it obvious to use forced heap aeration in a thiosulfate leaching process. It is far from obvious to combine a low concentration (lesss than about 0.03 M) of free ammonia in a thiosulfate lixiviant with forced heap aeration not only to control free ammonia evolution but also to realize acceptable leach kinetics. (*See* claims 60-62, 65-74, 77, 79 and 80). It has been discovered that any reduction in leach kinetics due to a low concentration of free ammonia is offset by the increase in leach kinetics realized by a higher level of dissolved molecular oxygen in the lixiviant from forced heap aeration.

Elmore does not overcome the deficiency of Wan. Elmore is directed to cyanide leaching (column 1, lines 9-15) and is silent regarding a lixiviant including free ammonia.

Applicant further submits that the Examiner has improperly combined Wan in view of Elmore. Wan discloses a thiosulfate leaching process having a significant concentration of free ammonia as a necessary component, while Elmore discloses an ammonia free cyanide leaching process which includes forced heap aeration. The references teach away from each other. The leaching processes differ both in lixiviant composition and leach chemistry. Wan requires significant levels of free ammonia. One of ordinary skill in the art would believe that applying the forced heap aeration process of Elmore to the leaching process of Wan (in which the lixiviant

includes significant amounts of free ammonia) would release significant amounts of ammonia vapor to the atmosphere likewise increase free ammonia consumption. According to Wan, a low free ammonia complex can destabilize the thiosulfate complex (col. 8, lines 1-4)) and decrease the concentration of the copper tetraamine complex. Wan requires maintaining at least a specific amount of free ammonia within the lixiviant to maintain the copper tetraamine complex. The cupric tetraamine complex is an oxidizing agent that catalyzes the oxidation reaction (col. 7, lines 63-68).

The present invention has a free ammonia content of no more than 0.03 M ammonia, whereas Wan requires at least 0.05 M free ammonia. The aeration process of the present invention having a free ammonia content of no more than 0.03 M ammonia can release minimal amounts of free ammonia to the atmosphere.

The dependent claims provide further reasons for allowability.

The absence or low levels of free ammonia (0.03 and 0.01M of claims 75 and 81) in the leach, along with the absence or low levels of copper (claims 63, 76, 80 and 82), can greatly simplify the leach process. More specifically, the introduction into the heap of molecular oxygen at a pressure greater than ambient atmospheric pressure facilitates the leach process in the absence of low levels of free ammonia and copper. Elimination or near-elimination of free ammonia and/or copper from the leach can advantageously allow a consistently high and reproducible precious metal extraction over a broader pH range than previously possible with other thiosulfate leaching process. For example, the leaching process can be operated at about pH 7-12, preferably at a pH of less than pH 9 (claim 64), and can provide for an oxidation-reduction potential typically ranging from about 100 to about 35 mV versus SHE (claim 83). Additionally, maintaining a free ammonia content of about 0.03M or less typically reduces

sufficiently and significantly the amount of ammonia gas evolution during the leaching process. Support for the free ammonia concentrations of no more than about 0.03M and 0.01M is found in paragraph 0103 of the specification.

Applicant, respectively, submits that Wan and Elmore individually and combinedly fail to explicitly and/or impliedly teach and suggest a thiosulfate lixiviant having a free ammonia concentration of no more than about 0.03M. Applicant requests that the 103(a) rejection of claims 60-77 be withdrawn.

Applicant submits that claims 61-82 are allowable due to their dependence from an allowable claim.

Based on the foregoing, Applicant believes that all pending claims are in condition for allowance and such disposition is respectfully requested. In the event that a telephone conversation would further prosecution and/or expedite allowance, the Examiner is invited to contact the undersigned.

Respectfully submitted,
SHERIDAN ROSS P.C.

Date: March 9, 2009

By: _____

Michael J. Incorvia
Reg. No. 58,936
1560 Broadway, Suite 1200
Denver, Colorado 80202
Telephone: 303-863-9700

J:\4764\-32\AMEND_AF.doc